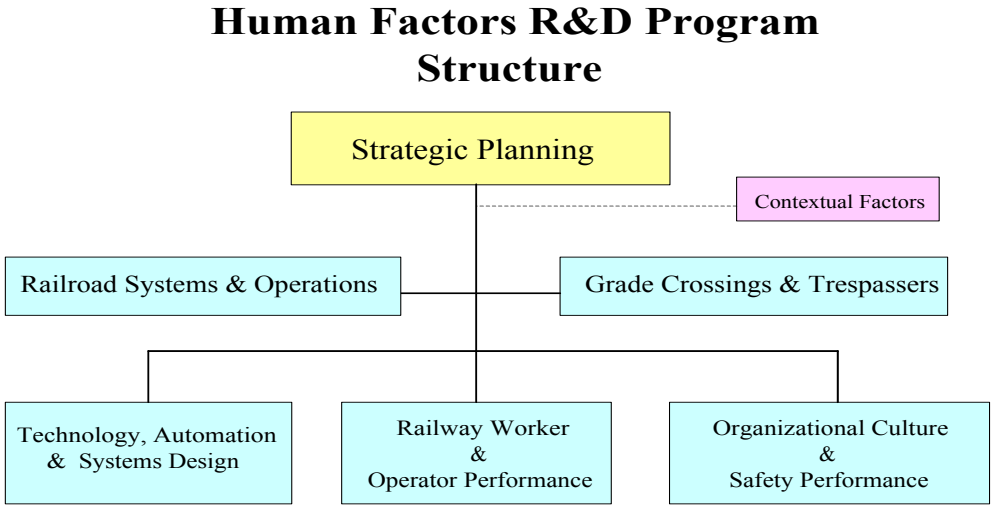
**FRA Human Factors R&D Program Overview**

Human factors accidents occur in the railroad industry in two program areas: Railroad Systems & Operations, and Grade Crossings & Trespassers. In each of these areas there are three subprograms (see Figure 1):

- technology, including automation and systems design;
- railway worker/operator performance, safety and health; and
- organizational culture and safety performance

Each program area/subprogram is supported by specific projects. Strategic planning and other programmatic activities help knit the entire program together, including the prioritization and selection of research projects, on-going planning, coordination, development and evaluation of the program activities. Periodic assessments of the legal, regulatory, and sociological barriers in the industry provide the necessary contextual understanding needed for building long-term collaborative research and evaluation partnerships. Also, strategic planning and contextual assessments help increase the feasibility, utilization and overall positive impact of the program.

Because of the cross cutting nature of human factors research, the Human Factors R&D Program leverages FRA resources through intra/inter-agency, inter-department, and international agreements and other collaborative research partnerships. Examples of external committees and collaborative research activities actively supported by the FRA Human Factors R&D Program include the DOT Human Factors Coordinating Committee, the NIH Sleep Disorders Research Advisory Board, and the International Standards Organization (ISO). Examples of railroad industry committees supported by the program include the Transportation Research Board Subcommittee on Human Factors in Railroad Operations (A3BO2-1), the North American Rail Alertness Partnership (NARAP), the Railroad Industry Close Call Planning Committee, and the Switching Operations Fatalities Analysis (SOFA) Working Group.



Key Functions of the Human Factors Program

- *Provide technical, analytical and scientific support* to Office of Safety policy makers and other key agency decision-makers (e.g., RSAC and SACP activities);

- *Create innovative, collaborative scientifically-based research and evaluation programs* that lead to significant industry-wide reductions in the number of accidents, injuries and deaths related to human error in railroad operations and railroad systems design;

- *Evaluate the utilization, impact and effectiveness of human factors related safety initiatives* to systematically determine the cost and safety benefit of these initiatives; and

- *Collaborate with inter-agency, inter-department, inter-government, and other non-government research institutions* (e.g., NIOSH) on cross-cutting research and evaluation programs, as well as the development and application of human factors standards (such as the International Standards Organization, or ISO).

Mission and Vision

- Mission: "*To use the scientific method, the science of human factors research, and program evaluation standards to systematically improve safety and mobility in the US railroad industry*."

- Vision: "*To become an international center for excellence in railroad human factors research in the next five years*."

Strategic Goals

1. To develop and implement a methodical process for *identifying and prioritizing important safety critical issues* in human factors in the railroad industry;

2. To develop and implement scientific methodologies that *systematically measure, analyze and monitor safety critical trends* in human factors in the railroad industry;

3. To prioritize and *set specific target reduction goals* (in cooperation with the Office of Safety) for human factors accidents, injuries and deaths in railroad operations;

4. To promote the understanding, awareness, and utilization of human factors research in the railroad industry;

5. To *broaden the base of expertise on railroad human factors* by educating and supporting critical FRA Human Factors R&D Program stakeholders (e.g. Office of Safety, Volpe Center, railroad labor and railroad management);

6. To *establish a collaborative process* that identifies and includes all key stakeholders in the conduct and application of human factors research, and in the evaluation of its impact in the railroad industry;

7. To develop and implement systematic methodologies for continuously measuring and evaluating human factors program performance (i.e. outcomes, impact and effectiveness of human factors research) in the railroad industry;

8. To develop and implement performance-based guidelines on *Program Evaluation Standards* for utility, feasibility, propriety, and accuracy of human factors applications in the railroad industry, and to institutionalize a process for how FRA's Human Factors Program meets those standards;

9. To *enhance critical human factors program areas* such as positive train control, behavior-based safety, digital communications, and fatigue;

10. To *create and coordinate railroad human factors research partnerships* with key academic, government, industry, and community stakeholders, both nationally and internationally, as a means to leverage resources and establish international prominence in the field.